# Research Aid

## *Production of Machinery and Equipment in the Peoples Republic of China*

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This handbook presents estimates of China's annual production of some 30 major items of machinery and equipment for all or parts of 1949–73. It is intended to supplement other research on the topic.[1]

Table 1 groups the estimates in the order in which the products appear in the State Statistical Bureau's standard industrial classification code[2]; it also serves as an index of page numbers for locating specific production series. Table 2 lists the space-saving abbreviations adopted for citing the principal sources of information.

Tables 3 through 9 present the estimates, with footnotes indicating the sources and methodologies used in deriving the estimates. Because estimating production by China's merchant shipbuilding industry involved unique difficulties, the methodology is described separately in Appendix A.

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Note: Data in parentheses are calculated residuals. Computations in the methodology are, in general, based on unrounded data, and the results have been rounded.

[1] Kang Chao, *Capital Formation in Mainland China, 1952–65*, Berkeley, University of California Press, 1974; Chu-yuan Cheng, *The Machine-Building Industry in Communist China*, New York, Aldine Press, 1971; Robert Michael Field, "The Chinese Machine-Building Industry: A Reappraisal," *China Quarterly*, No. 54, Apr–Jun 1973, pp. 313–314; and Thomas George Rawski, *The Economics of Chinese Machine Building, 1931 1967* (Doctoral Thesis), Harvard University, 1972.

[2] State Statistical Bureau, *Kung-yeh ch'an-p'in mu-lu* (*Index of Industrial Commodities*), Peking, 1953, pp. 41–85. The major categories and subcategories of the code dealing with machinery and equipment are listed in Appendix B.

Table 1

Guide to the Grouping of Estimates, by Category



[1] See Appendix A.

**Table 2**

**List of Principal Source References**

| Abbreviation | Reference |
|---|---|
| *BBC* | *British Broadcasting Corporation, Summary of World Broadcasts*, Part 3, the Far East, Weekly Economic Report, Reading, England. |
| *CB* | *Current Background*, Hong Kong, US Consulate General. |
| *CCTP* | *Ching-chi tao-pao* (*Economic Bulletin*), Hong Kong. |
| *CCYC* | *Ching-chi yen-chiu* (*Economic Research*), Peking. |
| *CHCC* | *Chi-hua ching-chi* (*Planned Economy*), Peking. |
| *CHKY* | *Chi-hsieh kung-yeh* (*Machine Industry*), Peking. |
| *CHKYCP* | *Chi-hsieh kung-yeh chou-pao* (*Machine Industry Weekly*), Shanghai. |
| *CKHW* | *Chung-kuo hsin-wen* (*China News Service*), Canton. |
| *CKCKY* | *Chung-kuo ch'ing-kung-yeh* (*Chinese Light Industry*), Peking. |
| *Communique* | *Kuan-yu fa-chan kuo-min ching-chi ti ti-i-ko wu nien* (*1953 nien tao 1957 nien*) *chi-hua chih-hang chieh-kuo ti kung pao* (*Communique on the Fulfillment of the First Five-Year Plan—1953–1957—for the Development of the National Economy*), State Statistical Bureau, Peking, 1959. |
| *CP* | *China Pictorial*, Peking. |
| *CR* | *China Reconstructs*, Peking. |
| *ECMM* | *Extracts from China Mainland Magazines*, Hong Kong, US Consulate General. |
| *FBIS* | *Foreign Broadcast Information Service*, Washington, DC. |
| *HC* | *Hung-ch'i* (*Red Flag*), Peking. |
| *JMJP* | *Jen-min jih-pao* (*People's Daily*), Peking. |
| *JPRS* | *Joint Publications Research Service*, Washington, DC. |
| *KJJP* | *Kung-jen jih-pao* (*Daily Worker*), Peking. |
| *NCNA* | *New China News Agency*, Peking and other cities. |
| *Past and Present* | *Wo-kuo kang-t'ieh tien-li mei-t'an chi-hsieh fang-chih tsao-chih kung-yeh ti chin-hsi* (*Chinese Iron and Steel, Electric Power, Coal, Machinery, Textile, and Paper Industries—Past and Present*), State Statistical Bureau, Peking, 1958. |
| *PC* | *People's China*, Peking. |
| *PR* | *Peking Review*, Peking. |
| *SCMM* | *Selections from China Mainland Magazines*, Hong Kong, US Consulate General. |
| *SCMP* | *Survey of China Mainland Press*, Hong Kong, US Consulate General. |
| *TCKT* | *Tung-chi kung-tso* (*Statistical Work*), Peking. |
| *TGY* | *Ten Great Years*, State Statistical Bureau, Foreign Languages Press, Peking, 1960. |
| *TKP* | *Ta kung pao* (*Impartial Daily*), Peking and Hong Kong. |

**Table 3**

**Production of Power and Electrical Equipment**

| Year | Steam Boilers (Metric Tons of Steam per Hour) | Hydro-turbines (Kilowatts) | Power Machinery (Thousand Horsepower) | Electric Generators (Kilowatts) | Electric Motors (Thousand Kilowatts) | Transformers (Thousand Kilovolt-Amperes) |
|---|---|---|---|---|---|---|
| 1949..... | 255 | .... | 10 | 10,181 | 61.0 | 71.64 |
| 1950..... | 585 | .... | 11 | 22,798 | 199.0 | .... |
| 1951..... | 956 | .... | 26 | 31,731 | 225.0 | .... |
| 1952..... | 1,222 | 6,664 | 35 | 29,678 | 638.7 | 1,167.08 |
| 1953..... | 2,774 | 17,260 | 144 | (59,525) | 918.0 | 1,961 |
| 1954..... | 2,885 | 10,000 | 172 | 54,617 | 957.0 | 1,961 |
| 1955..... | 2,059 | 33,360 | 247 | 107,595 | 606.9 | 1,926 |
| 1956..... | 3,022 | 102,749 | 657 | 288,263 | 1,069.0 | 2,891.07 |
| 1957..... | .... | 74,903 | 690 | 312,200 | 1,445.0 | 3,590 |
| 1958..... | .... | .... | 2,000 | 1,425,000 | 6,052.0 | 12,000 |
| 1964..... | .... | .... | .... | 625,000 | .... | .... |
| 1965..... | .... | .... | .... | 780,000 | .... | .... |
| 1972..... | .... | .... | .... | 3,500,000 | .... | .... |

Notes and sources:

Steam boilers and hydroturbines: see Table 3-a.

Power machinery: see Table 3-b.

Electric generators, electric motors, and transformers: see Table 3-c.

Table 3-a

Production of Steam Boilers and Hydroturbines

| | Steam Boilers | | Hydroturbines | |
|---|---|---|---|---|
| | Units | Metric Tons of Steam per Hour | Units | Kilowatts |
| 1949 | 209 | 255 | .... | .... |
| 1950 | 479 | 585 | .... | .... |
| 1951 | 782 | 956 | .... | .... |
| 1952 | 1,000 | 1,222 | 11 | 6,664 |
| 1953 | .... | 2,774 | .... | 17,260 |
| 1954 | .... | 2,885 | .... | 10,000 |
| 1955 | 1,274 | 2,059 | .... | 33,360 |
| 1956 | 1,033 | 3,022 | 57 | 102,749 |
| 1957 | .... | .... | .... | 74,903 |

Notes and sources:

Steam Boilers

Units

1949–52 — *Past and Present*, p. 113.

1955 — *Ibid.*, p. 139.

1956 — *Ibid.*, p. 122.

Output per hour

1949–51 — Calculated from the 1952 data as 1,222 tons per unit.

1952 — *Past and Present*, p. 122.

1953 — *CB*, No. 292, 15 Sep 1954, p. 3.

1954 — *Ibid.*, No. 360, 29 Sep 1955, p. 3.

1955 — *Past and Present*, p. 139.

1956 — *Ibid.*, p. 122.

Hydroturbines

Units and kilowatts

1952, 1956 — *Past and Present*, p. 122.

Kilowatts

1953 — *CB*, No. 292, 15 Sep 1954, p. 3.

1954 — *Osnovnye pokazateli razviliye narodnovo khozyaystva kitayskoy narodnoy respubliki* (*Principal Indexes of the Development of the National Economy of the Peoples Republic of China*), State Statistical Publishers, Moscow, 1958, pp. 38–39. This is a Russian translation of a report published by the Chinese State Statistical Bureau.

1955 — *CB*, No. 474, 12 Aug 1957, p. 3.

1957 — *Tien-chi kung-yeh* (*Electrical Industry*), No. 10, 1957, p. 6.

Table 3-b

Production of Power Machinery

Thousand Horsepower

| | Total | Steam Engines | Internal Combustion Engines | | |
|---|---|---|---|---|---|
| | | | Total | Diesel | Other |
| 1949 | 10 | (6) | 4 | .... | .... |
| 1950 | 11 | .... | .... | .... | .... |
| 1951 | 26 | .... | .... | .... | .... |
| 1952 | 35 | 7.458 | 27.621 | 17.995 | (9.626) |
| 1953 | 144 | .... | .... | .... | .... |
| 1954 | 172 | .... | .... | .... | .... |
| 1955 | 247 | .... | .... | .... | .... |
| 1956 | 657 | (116.239) | 540.761 | 371.700 | (169.061) |
| 1957 | 690 | (81.000) | 609.000 | .... | .... |
| 1958 | 2,000 | .... | .... | .... | .... |

Notes and sources:

Total power machinery

1949 58 — *TGY*, p. 97.

Steam engines

1952 — *Past and Present*, p. 142.

Total internal combustion engines

1949 — Chu-yuan Cheng, *op. cit.*, p. 253.

1952 — *Past and Present*, p. 123.

1956 — *Ibid.*

1957 — *Communique*, p. 7.

Diesel engines

1952 — *Past and Present*, p. 114.

1956 — *ECMM*, No. 105, 28 Oct 1957, p. 25.

Table 3-c

Production of Electric Generators, Electric Motors, and Transformers

| | Electric Generators | | Electric Motors (Thousand Kilowatts) | Transformers (Thousand Kilovolt-Amperes) |
|---|---|---|---|---|
| | Units | Kilowatts | | |
| 1949 | .... | 10,181 | 61.0 | 71.64 |
| 1950 | .... | 22,798 | 199.0 | .... |
| 1951 | .... | 31,731 | 225.0 | .... |
| 1952 | 746 | 29,678 | 638.7 | 1,167.08 |
| 1953 | .... | (59,525) | 918.0 | 1,961 |
| 1954 | .... | 54,617 | 957.0 | 1,961 |
| 1955 | 2,517 | 107,595 | 606.9 | 1,926 |
| 1956 | 6,883 | 288,263 | 1,069.0 | 2,891.07 |
| 1957 | .... | 312,200 | 1,445.0 | 3,590 |
| 1958 | .... | 1,425,000 | 6,052.0 | 12,000 |
| 1964 | .... | 625,000 | .... | .... |
| 1965 | .... | 780,000 | .... | .... |
| 1972 | .... | 3,500,000 | .... | .... |

Notes and sources:

Electric generators

Units

| | |
|---|---|
| 1952 | *Past and Present*, p. 113. |
| 1955 | *Ibid.*, p. 139. |
| 1956 | *Ibid.*, p. 113. |

Kilowatts

| | |
|---|---|
| 1949–52 | *Ibid.*, p. 113. |
| 1953 | *Ibid.*, p. 74, states that total output in 1953–56 was 510,000 kilowatts. Total output in 1954–56, according to the sources cited below, was 450,475 kw. Hence, 1953 output = 510,000 − 450,475 = 59,525 kw. |
| 1954 | *CB*, No. 391, p. 2. |
| 1955 | *Past and Present*, p. 139. |
| 1956 | *Ibid.*, p. 123. |
| 1957 | *TCKT*, No. 10, 1957, p. 6. |
| 1958 | *PR*, 15 Sep 1959, p. 22. |
| 1964-65 | The Chinese told visitors that output in 1972 was about 4.5 times that of 1965 which was 25% greater than in 1964. If output in 1972 was 3,500,000 kw (see below), output in 1965 was about 780,000 kw and in 1964 was about 625,000 kw. |
| 1972 | Output in 1972 was 528,000 kw at the Peking Heavy Electrical Machinery Plant and 1 million kw at the Shanghai Electrical Machinery Plant (*Report, Canadian Electrical Power Mission to the Peoples Republic of China*, The Runge Press, Ltd., Ottawa, 1974). In estimating a total of about 3,500,000 kw for the year, it was assumed that the electrical plants at Te-yang and Harbin produced about the same levels of output as the Peking and Shanghai plants, respectively, and that smaller plants elsewhere in China produced a total of about 500,000 kw. |

Electric motors

| | |
|---|---|
| 1949–58 | *TGY*, p. 97. |

Transformers

| | |
|---|---|
| 1949 | *Tien-chi kung-yeh* (*Electrical Industry*), No. 10, 1957, p. 6. |
| 1952, 1955–56 | *Past and Present*, pp. 114, 123, 139. |
| 1953 | *CB*, No. 292, p. 3. |
| 1954 | *CB*, No. 360, p. 3. |
| 1957 | *CHKY*, No. 3, 1958, p. 3. |
| 1958 | *TCKT*, No. 19, 1959, pp. 14 19. |

Table 4

Production of Machine Tools

| | Thousand Units | Metric Tons | | Thousand Units | Metric Tons |
|---|---|---|---|---|---|
| 1949 | 1,582 | .... | 1962 | 25 | .... |
| 1950 | 3,312 | .... | 1963 | 35 | .... |
| 1951 | 5,853 | .... | 1964 | 40 | .... |
| 1952 | 13,734 | 16,298 | 1965 | 45 | .... |
| 1953 | 20,502 | 24,039 | 1966 | 50 | .... |
| 1954 | 15,901 | 23,530 | 1967 | 40 | .... |
| 1955 | 13,708 | .... | 1968 | 45 | .... |
| 1956 | 25,928 | .... | 1969 | 55 | .... |
| 1957 | 28,297 | .... | 1970 | 70 | .... |
| 1958 | 30 | .... | 1971 | 75 | .... |
| 1959 | 35 | .... | 1972 | 75 | .... |
| 1960 | 40 | .... | 1973 | 80 | .... |
| 1961 | 30 | .... | | | |

Notes and sources:

Units

1949–56 *TGY*, p. 97.

1957 *PR*, 2 Sep 1958, p. 12.

1958–73 Official sources reported output of 50,000 units in 1958 (*TGY*, p. 97), 70,000 in 1959 (*PR*, 5 Apr 1960, p. 16), and a planned figure of 90,000 for 1960 (*Ibid.*, p. 12). These Leap Forward figures are obviously crude estimates and have been heavily deflated to exclude the huge volume of primitive machinery thrown together by unskilled labor in communes and small, poorly equipped shops during this period. Only about half of the reported output is believed to have been comparable in quality, durability, and utility to the 28,297 units reported for 1957. Estimates for 1958 and thereafter were derived from fragmentary reports on output trends and capacity additions at some 30 major machine tool plants. These estimates, for the most part, should be considered as minimum totals; in any given year, literally hundreds of small and medium-size machinery plants may have been assigned the tasks of producing a small assortment of standardized lathes, drilling machines, etc.

Metric tons

1952–54 *CB*, No. 429, 26 Nov 1956, p. 7.

Table 5

Production of Textile Machinery

Thousand Units

| | Looms | Spindles | Sewing Machines | | Looms | Spindles | Sewing Machines |
|---|---|---|---|---|---|---|---|
| 1951..... | 4.217 | 131.984 | .... | 1960..... | .... | .... | 676 |
| 1952..... | 6.468 | 383.128 | .... | | | | |
| 1953..... | 9.653 | 287.424 | 257 | 1964..... | .... | 700 | 1,257 |
| 1954..... | 15.120 | 489.044 | 316 | 1965..... | .... | 1,400 | 1,571 |
| 1955..... | 9.291 | 304.400 | 174 | 1969..... | .... | .... | 1,800 |
| 1956..... | 19.251 | 784.020 | 206 | 1970..... | .... | .... | 2,400 |
| 1957..... | (12.300) | 484 | 278 | 1971..... | .... | .... | 3,000 |
| 1958..... | 13.700 | 1,000 | 637 | 1972..... | .... | .... | 3,300 |
| 1959..... | 21.900 | 1,360 | (563) | 1973..... | .... | .... | 3,894 |

Notes and sources:

Looms

1951–56 *Past and Present*, p. 161.

1958–59 *CB*, No. 618, p. 19.

1957 Total output through 1958 was 90,000 units (*NCNA*, Peking, 18 Sep 1959); through 1956 it was 64,000 units (*Past and Present*, p. 161). Hence, output in 1957 = 90,000 − 64,000 − 13,700 (1958 output) = 12,300.

Spindles

1951–56 *Past and Present*, p. 161.

1957–58 *CB*, No. 558, 20 Apr 1959, p. 3.

1959 *CKIIW*, 11 Apr 1960, p. 12.

1964 65 Output of 1,400,000 units in 1965 was double output in 1964 (*NCNA*, 17 and 18 Dec 1965).

Sewing machines

1953–55 *CKCKY*, No. 16, 1957, p. 13.

1956–58 *Ibid.*, No. 5, 1959, pp. 3 4 (*JPRS*, No. 981 1, 23 Oct 1959).

1959 According to *JMJP*, 7 Apr 1960 (*FBIS*, 11 Apr 1960, p. BB23), total output in 1958 59 was 1,200,000 units. Hence, output in 1959 = 1,200,000 − 637,000 = 563,000.

1960 According to *IIC*, No. 6, 16 Feb 1961 (*SCMM*, No. 256, p. 21), output increased by more than 20%.

1969–71 A visiting foreigner was told that actual output totaled 1,800,000 units in 1969 and that the 1971 plan called for 3 million units. Interpolation between these figures gives an estimate of 2,400,000 units for 1970.

1972 An increase of 10% was assumed.

1965 According to *NCNA*, Peking, 5 Oct 1973 (*FBIS*, 24 Oct 1973, p. B13), output in 1972 was 2.1 times the figure for 1965. Hence, 1965 output = 3,300,000/2.1 = 1,571,000 units.

1964 Output increased by 30% in the first quarter (*TKP*, Peking, 3 May 1965, p. 2) and by 20% to 47% in the first eight months (*FBIS*, 15 Oct 1965, p. ccc2). On this basis, an annual increase of 25% was assumed. 1964 output = 1965 output/1.25 = 1,257,000 units.

1973 According to *NCNA*, Peking, 5 Oct 1973 (*FBIS*, 24 Oct 1973, p. B13), output in the first eight months increased by 18.6%. An annual increase of 18% was assumed.

Table 6

Production of Agricultural Equipment and Tractors

| | Agricultural Machinery (Units) | Powered Irrigation Equipment (Thousand Horsepower) | Standard Tractors (Thousand 15-Horsepower Units) | Garden Tractors (15-Horsepower Units) |
|---|---|---|---|---|
| 1949 | .... | .... | .... | .... |
| 1950 | .... | .... | .... | .... |
| 1951 | .... | .... | .... | .... |
| 1952 | 50,063 | .... | .... | .... |
| 1953 | 100,664 | .... | .... | .... |
| 1954 | 176,503 | .... | .... | .... |
| 1955 | 736,935 | .... | .... | .... |
| 1956 | 2,174,193 | 170 | .... | .... |
| 1957 | .... | (52) | .... | .... |
| 1958 | .... | 720 | 1.1 | .... |
| 1959 | .... | 1,255 | 9.4 | .... |
| 1960 | .... | 1,610 | 23.8 | .... |
| 1961 | .... | 700 | (16.2) | .... |
| 1962 | .... | 955 | 13.1 | .... |
| 1963 | .... | 640 | 15.7 | .... |
| 1964 | .... | (860) | 19.3 | 150 |
| 1965 | .... | 1,150 | 23 | 875 |
| 1966 | .... | 1,530 | 32 | 2,625 |
| 1967 | .... | .... | 27 | 2,100 |
| 1968 | .... | .... | 30 | 2,675 |
| 1969 | .... | .... | 40 | 3,200 |
| 1970 | .... | .... | 70 | 9,000 |
| 1971 | .... | 3,089 | 105 | 9,625 |
| 1972 | .... | 4,016 | 115 | 21,000 |
| 1973 | .... | 5,984 | 138 | 28,000 |

Notes and sources:
Agricultural machinery: see Table 6-a.
Powered irrigation equipment: see Table 6-b.
Standard tractors: see Table 6-c.
Garden tractors: see Table 6-d.

Table 6-a

Production of Agricultural Machinery

Units

| | Total | Plows | Seeders | Cultivators | Harvesters |
|---|---|---|---|---|---|
| 1952 | 50,063 | 5,060 | 344 | 44,441 | 218 |
| 1953 | 100,664 | 3,007 | 4,590 | 92,533 | 534 |
| 1954 | 176,503 | 59,582 | 12,469 | 98,780 | 5,672 |
| 1955 | 736,935 | 522,697 | 24,533 | 179,502 | 10,203 |
| 1956 | 2,174,193 | 1,793,186 | 76,683 | 300,527 | 3,797 |

Notes and sources:
1952–56: *KJJP*, 21 Sep 1957.

Table 6-b

Powered Irrigation Equipment

Thousand Horsepower

| | Inventory | Production | | Inventory | Production |
|---|---|---|---|---|---|
| 1949 | 97 | .... | 1962 | 5,800 | 955 |
| | | | 1963 | 6,440 | 640 |
| 1951 | 118 | .... | 1964 | 7,300 | (860) |
| | | | 1965 | 8,450 | 1,150 |
| 1955 | (338) | .... | 1966 | 9,980 | 1,530 |
| 1956 | 508 | 170 | | | |
| 1957 | 560 | (52) | 1970 | 16,911 | .... |
| 1958 | 1,280 | 720 | 1971 | 20,000 | 3,089 |
| 1959 | 2,535 | 1,255 | 1972 | 24,016 | 4,016 |
| 1960 | 4,145 | 1,610 | 1973 | 30,000 | 5,984 |
| 1961 | 4,845 | 700 | | | |

Notes and sources:

Where data on both inventory and production were not available, it was assumed that production in the current year was the difference between inventory in the current year and inventory in the previous year.

1949 inventory: *TKP*, Peking, 19 Dec 1957, p. 1.

1951 inventory: *PC*, 1 Oct 1952, p. 28.

1956 inventory and production: 390,000 horsepower of equipment was manufactured in 1952–56 (*ECMM*, No. 127, 5 May 1958, p. 48); hence, inventory in 1956 = 390,000 + 118,000 = 508,000. From 1 Oct 1955 to 30 Sep 1956, 170,000 horsepower were added (*ECMM*, No. 99, p. 1).

1955 inventory: 508,000 − 170,000 = 338,000.

1957 inventory and production: Inventory (*JMJP*, 14 Jan 1961); hence, 1957 production = 560,000 − 508,000 = 52,000.

1958–63 inventory and production: Figures for production in these years were reduced to account for discrepancies between official data reported from year to year and total capacity reported for 1957 and 1962. Yearly production and inventory figures indicate an addition of 7,480,000 horsepower during the period, whereas a later figure indicates that the inventory rose by 5,240,000 horsepower. Thus production figures derived from official data were reduced by 30%. The differences in official figures probably are due mainly to the manufacture of unusable equipment during the Leap Forward (1958–60). Derivation of the unadjusted and adjusted series is shown below (in thousand horsepower):

| | Unadjusted Series | | Adjusted Series | |
|---|---|---|---|---|
| | Inventory | Production | Inventory | Production |
| 1957 | 560 | 52 | 560 | 52 |
| 1958 | 1,590 [1] | 1,030 [2] | 1,280 | 720 |
| 1959 | 3,380 [3] | 1,790 [4] | 2,535 | 1,255 |
| 1960 | 5,680 [5] | 2,300 [6] | 4,145 | 1,610 |
| 1961 | 6,680 [7] | 1,000 [6] | 4,845 | 700 |
| 1962 | 5,800 [8] | 1,360 [9] | 5,800 | 955 |
| 1963 | 6,440 [10] | 640 [9] | 6,440 | 640 |

[1] 560 + 1,030.

[2] 3,380–560–1,790 = 1,030.

[3] *CB*, No. 618, 17 May 1960.

[4] Planned output for 1960 was 2,500,000 horsepower, or 40% above actual output in 1959 (*CB*, No. 618, 17 May 1960). Hence, actual output in 1959 was 2,500,000/1.4 = 1,790,000.

[5] 3,380 + 2,300 = 5,680.

[6] *NCNA*, Peking, 26 Sep 1962. The total figure for 1960–61 (3,300) is verified in *JPRS*, No. 13,828, 28 May 1962, p. 48.

[7] 5,680 + 1,000 = 6,680.

[8] *PR*, 28 Jun 1963, p. 20.

[9] Some 3,000,000 horsepower in equipment was added in 1961–63 (*CKHW*, 14 Aug 1964, p. 9) and 640,000 in 1963 (*FBIS*, 3 Jan 1964, p. cccll). Hence, 1962 output = 3,000,000 − 640,000 = 1,360,000.

[10] 5,800 + 640 = 6,440.

1964 inventory and production: The inventory increased by 12 times over 1957 (*CR*, Mar 1965, p. 3)—13 x 560,000 = 7,300,000. Output in 1964 = 7,300,000 − 6,440,000 = 860,000.

1965 inventory and production: Output was one-third higher than in 1964 (*Far East Trade and Development*, May 1967, p. 461)—1.333 x 860,000 = 1,150,000. Inventory = 7,300,000 + 1,150,000 = 8,450,000.

1966 inventory and production: Supplies were one-third higher than in 1965 (*FBIS*, 9 Jan 1967 p. ccc4) - 1.333 x 1,150,000 = 1,530,000. Inventory = 8,450,000 + 1,530,000 = 9,980,000.

1970-73 inventory and production: 1971 inventory (*FBIS*, 23 Oct 1974, p. E1); 1973 inventory (*NCNA*, Peking, 16 Sep 1974). Output in the first eight months of 1972 was 30% higher than in the same period in 1971 (*NCNA*, Peking, 5 Oct 1972) and 49% higher in the first eight months of 1973 compared with the same period in 1972 (*FBIS*, 5 Oct 1973, p. B2). On the assumption that these rates of increase were maintained throughout the year, inventory and output were derived as follows:

Let $I_{73}$ and $I_{71}$ represent inventories at the end of 1973 and 1971, respectively, and $Q_{71}$, $Q_{72}$, and $Q_{73}$ stand for production in 1971, 1972, and 1973. Then, in thousands of horsepower,

$$I_{73} - I_{71} = Q_{72} + Q_{73}.$$

Solving this equation yields

$$30{,}000 - 20{,}000 = 1.30Q_{71} + 1.49Q_{72}$$
$$10{,}000 = 2.49 \times 1.30Q_{71}$$
$$Q_{71} = 3{,}089$$
$$Q_{72} = 4{,}016$$
$$Q_{73} = 5{,}984$$
$$I_{70} = 16{,}911$$
$$I_{72} = 24{,}016.$$

**Standard Tractors**

**Thousand 15-Horsepower Units**

| | Inventory | Production | | Inventory | Production |
|---|---|---|---|---|---|
| 1949..... | 0.401 | .... | 1962..... | 103 | 13.1 |
| 1950..... | 1.286 | .... | 1963..... | 115 | 15.7 |
| 1951..... | 1.410 | .... | 1964..... | 123 | 19.3 |
| 1952..... | 2.006 | .... | 1965..... | .... | 23 |
| 1953..... | 2.719 | .... | 1966..... | 150 | 32 |
| 1954..... | 5.061 | .... | 1967..... | .... | 27 |
| 1955..... | 8.094 | .... | 1968..... | .... | 30 |
| 1956..... | 19.367 | .... | 1969..... | .... | 40 |
| 1957..... | 24.629 | .... | 1970..... | 272 | 70 |
| 1958..... | 45.330 | 1.1 | 1971..... | .... | 105 |
| 1959..... | 59 | 9.4 | 1972..... | 354 | 115 |
| 1960..... | 79 | 23.8 | 1973..... | .... | 138 |
| 1961..... | .... | (16.2) | | | |

Notes and sources:

Production

Production of tractors began in 1958. Standard units measure each type of tractor in terms of horsepower rather than physical units and thus provide an adjustment for differences in size, weight, complexity, and cost. China follows the practice of other Communist countries and converts each tractor to standard units of 15 drawbar horsepower. The drawbar horsepower of Chinese tractors ranges from 50% to 70% of the more commonly used brake horsepower. For most years, the tractor produced in the greatest volume probably has been a 54 brake horsepower model that develops 36 horsepower at the drawbar. One physical unit is equivalent to 36.15 = 2.1 standard 15-horsepower units.

1958: Production was 957 physical units (*TGY*, p. 98). A perusal of reports discussing tractor models produced in 1958 suggests that an average tractor was the equivalent of about 1.2 standard 15-horsepower units. Thus, 957 x 1.2 = 1,100 standard units. This estimate is consistent with a report that annual average output in 1960 61 20,000 standard units was about 20 times that of 1958 (*SCMM*, No. 315, 28 May 1962, p. 21).

1959: *Ekonomika sotsialisticheskikh stran v tsifrakh 1962, Kratkiy Statisticheskiy Sbornik*, Moscow, 1963, p. 32.

1960: *Chung-kuo ch'ing-nien pao* (*China Youth Daily*), 12 Mar 1961.

1961: Output of 40,000 standard units was reported as the total for the two years 1960 61 (*SCMM*, No. 315, 28 May 1962, p. 21). Output in 1961 = 40,000 − 23,800 = 16,200 units.

1962–63: Output of 45,000 standard units was reported as the total for the three years 1961 63 (*CKIIW*, Canton, 14 Aug 1964, p. 42). Output in 1962–63 = 45,000 − 16,200 = 28,800 units. Output in 1963 was about 20% above that in 1962 (*PR*, 3 Jan 1964, p. 42). Algebraically,

$$Q_{62} + Q_{63} = 28{,}800$$
$$Q_{63} = 1.2Q_{62}.$$

Solving these equations yields

$$Q_{62} = 13{,}100$$
$$Q_{63} = 15{,}700.$$

1964: Output in the first eight months was about 23% above that in the corresponding period of 1963 (*PR*, 11 Dec 1964, pp. 26 27). This rate of increase was assumed for the entire year.

1965–70: Rough estimates based on fragmentary information on output at the Lo-yang and other major tractor plants.

1971: Derived from the 1972 figure on the basis of a report that output in 1972 was 10% above that of 1971 (*FBIS*, 15 May 1973, p. B3).

1972: Output in 1972 was five times that of 1965. (*Economic Reporter*, English supplement, Hong Kong, No. 4, Oct–Dec 1973, p. 23).

1973: Output was six times that of 1965. (*CR*, Jan 1965, p. 6).

Inventory

These figures refer to tractors for use in agriculture.

1949–58: *TGY*, p. 135.

1959: *PR*, 1 Mar 1960, p. 6.

1960: *PR*, 20 Jan 1961, p. 4.

1962: *PR*, 10 May 1963, p. 13.

1963: *PR*, 11 Dec 1964, pp. 26–27.

1964: *PR*, 1 Jan 1965, p. 8.

1966: Soviet source citing official Chinese figures (*FBIS*, Vol. III, 8 Nov 1974, p. C4).

1970: *PR*, 22 Oct 1971, pp. 5–7.

1972: Cheng Shih, *A Glance at China's Economy*, Peking, Foreign Languages Press, 1974, p. 18.

**Table 6-d**

**Garden Tractors**

**Thousand Units**

| | Inventory | | Production | |
|---|---|---|---|---|
| | Physical Units | 15-Horsepower Units | Physical Units | 15-Horsepower Units |
| 1964 | 0.6 | 0.150 | 0.6 | 0.150 |
| 1965 | 4.1 | 1.025 | 3.5 | 0.875 |
| 1966 | 14.6 | 3.650 | 10.5 | 2.625 |
| 1967 | 23.0 | 5.750 | 8.4 | 2.100 |
| 1968 | 33.7 | 8.425 | 10.7 | 2.675 |
| 1969 | 46.5 | 11.625 | 12.8 | 3.200 |
| 1970 | 82.5 | 20.625 | 36.0 | 9.000 |
| 1971 | 121.0 | 30.250 | 38.5 | 9.625 |
| 1972 | 205.0 | 51.250 | 84.0 | 21.000 |
| 1973 | 317.0 | 79.250 | 112.0 | 28.000 |

Notes and sources:

Production of garden tractors was negligible prior to 1964. The garden tractor produced in the greatest volume probably has been a model with a brake horsepower of 7. Assuming a drawbar horsepower of 4, one physical unit is equivalent to about one-fourth of a standard 15-horsepower unit. Figures in the table were derived by first estimating output in physical units and then dividing these estimates by 4 to obtain output in standard 15-horsepower units.

With the exceptions noted below, the estimates were based on fragmentary reports of output trends at numerous, widely scattered, small-scale tractor plants. Inventory estimates were made by adding production in the current year to inventory in the previous year, with no allowance made for depreciation.

Production

1966: Output in the first nine months was up by 200% over that of the corresponding period in 1965 (*SCMP*, No. 3807, 25 Oct 1966, p. 14). This rate of increase was assumed for the entire year.

1970: Output in the first seven months was almost twice as high as that for all of 1966 (*CR*, Dec 1970, p. 20). Output in the first seven months was 21,000 and for the entire year was estimated as 21,000 x 12/7 = 36,000.

1972: Output was 24 times that of 1965 (Cheng Shih, *A Glance at China's Economy*, Peking, Foreign Languages Press, 1974, p. 23).

1973: Output was 32 times that of 1965 (*CR*, Jan 1975, p. 6).

Inventory

1972: Inventory in 1972 was more than 50 times that of 1965 (Cheng Shih, *op. cit.*, p. 18)—50 x 4,100 = 205,000. This estimate of inventory served as a control total in estimating output for the years not specifically listed above.

Table 7

**Production of Transportation Equipment**

| | Mainline Locomotives (Units) | Freight Cars (Thousand Units) | Merchant Vessels (Thousand Tons of Light Ship Displacement) | Motor Vehicles (Thousand Units) |
|---|---|---|---|---|
| 1949 | .... | 3.155 | .... | .... |
| 1950 | .... | 0.696 | .... | .... |
| 1951 | .... | 2.882 | .... | .... |
| 1952 | 20 | 5.792 | 6.1 | .... |
| 1953 | 10 | 4.501 | 14.8 | .... |
| 1954 | 52 | 5.446 | 31.4 | .... |
| 1955 | 98 | 9.258 | 50.2 | .... |
| 1956 | 184 | 7.122 | 51.2 | 1.654 |
| 1957 | 167 | 7.3 | 46.4 | 7.5 |
| 1958 | 350 | 11.0 | 56.6 | 16.0 |
| 1959 | 533 | 17.0 | 64.5 | 19.4 |
| 1960 | 602 | 23.0 | 41.4 | 15.0 |
| 1961 | 100 | 3.0 | 28.2 | 1.0 |
| 1962 | 25 | 4.0 | 23.1 | 8.4 |
| 1963 | 27 | 5.9 | 25.8 | 16.8 |
| 1964 | 27 | 5.7 | 34.2 | 20.3 |
| 1965 | 50 | 6.6 | 29.1 | 30 |
| 1966 | 140 | 7.5 | 19.8 | 43 |
| 1967 | 200 | 6.9 | 22.5 | 32 |
| 1968 | 240 | 8.7 | 48.0 | 27 |
| 1969 | 261 | 11 | 108.9 | 60 |
| 1970 | 285 | 12 | 193.2 | 70 |
| 1971 | 205 | 14 | 231.9 | 86 |
| 1972 | 225 | 15 | 163.5 | 100 |
| 1973 | 240 | 16 | 161.7 | 110 |

Notes and sources:
Locomotives and freight cars: see Table 7-a.
Merchant vessles: see Appendix A.
Motor vehicles: see Table 7-b.

Table 7-a

Production of Mainline Locomotives and Freight Cars

Units

| | Mainline Locomotives | | | | Freight Cars |
|---|---|---|---|---|---|
| | Total | Steam | Diesel | Electric | |
| 1949 | .... | .... | .... | .... | 3,155 |
| 1950 | .... | .... | .... | .... | 696 |
| 1951 | .... | .... | .... | .... | 2,882 |
| 1952 | 20 | 20 | .... | .... | 5,792 |
| 1953 | 10 | 10 | .... | .... | 4,501 |
| 1954 | 52 | 52 | .... | .... | 5,446 |
| 1955 | 98 | 98 | .... | .... | 9,258 |
| 1956 | 184 | 184 | .... | .... | 7,122 |
| 1957 | 167 | 167 | .... | .... | 7,300 |
| 1958 | 350 | 346 | 2 | 2 | 11,000 |
| 1959 | 533 | 530 | 3 | .... | 17,000 |
| 1960 | 602 | 600 | .... | 2 | 23,000 |
| 1961 | 100 | 100 | .... | .... | 3,000 |
| 1962 | 25 | 25 | .... | .... | 4,000 |
| 1963 | 27 | 25 | .... | 2 | 5,900 |
| 1964 | 27 | 25 | 2 | .... | 5,700 |
| 1965 | 50 | 20 | 30 | .... | 6,600 |
| 1966 | 140 | 70 | 70 | .... | 7,500 |
| 1967 | 200 | 100 | 100 | .... | 6,900 |
| 1968 | 240 | 100 | 140 | .... | 8,700 |
| 1969 | 261 | 100 | 160 | 1 | 11,000 |
| 1970 | 285 | 100 | 180 | 5 | 12,000 |
| 1971 | 205 | .... | 200 | 5 | 14,000 |
| 1972 | 225 | .... | 220 | 5 | 15,000 |
| 1973 | 240 | .... | 240 | .... | 16,000 |

Notes and sources:

Mainline locomotives

1952–58: *TGY*, p. 98.

1959: Planned output in 1960 was 800 units, an increase of more than 50% over that of 1959 (*PR*, 5 Apr 1960, p. 12)—hence, 1959 output was 800/1.5 = 533 units.

1960–73: Estimated from fragmentary reports on production trends at major manufacturing facilities in Chu-chou, Dairen, Ta-t'ung, and Tsingtao.

Freight cars

1949–52: *Past and Present*, p. 113.

1953: *CB*, No. 360, 29 Sep 1955, p. 3.

1954–55: *PC*, No. 14, 16 Jul 1956, supplement, p. 4.

1956: *Past and Present*, p. 123.

1957–58: *CB*, No. 556, 1959, p. 5, and *Communique*, p. 17.

1959: *Kung-lu* (Highways), Peking, 5 Dec 1959.

1960–73: Estimated from fragmentary reports on production trends at major manufacturing facilities in Ch'i-ch'i-ha-erh, Chu-chou, Dairen, and Wu-ch'ang.

Table 7-b

Production of Motor Vehicles

Thousand Units

| | Total | Ch'ang-ch'un | Other | | Total | Ch'ang-ch'un | Other |
|---|---|---|---|---|---|---|---|
| 1956..... | 1.654 | 1.654 | .... | 1965..... | 30 | 27.5 | 2.5 |
| 1957..... | 7.5 | 7.5 | .... | 1966..... | 43 | 37.4 | 5.6 |
| 1958..... | 16.0 | 16.0 | .... | 1967..... | 32 | 28 | 4 |
| 1959..... | 19.4 | 19.4 | .... | 1968..... | 27 | 24 | 3 |
| 1960..... | 15.0 | 15.0 | .... | 1969..... | 60 | 42 | 18 |
| 1961..... | 1.0 | 1.0 | .... | 1970..... | 70 | 50 | 20 |
| 1962..... | 8.4 | 7.3 | 1.1 | 1971..... | 86 | 60 | 26 |
| 1963..... | 16.8 | (16.2) | 0.6 | 1972..... | 100 | 47 | 53 |
| 1964..... | 20.3 | 19.5 | 0.8 | 1973..... | 110 | 50 | 60 |

Notes and sources:

For all practical purposes, the Ch'ang-ch'un Motor Vehicle Plant was the only producer during 1956–61.

1956–58: *TGY*, p. 98.

1959: *JMJP*, 25 Jan 1960.

1960–61: Arbitrary estimates based on reports that Ch'ang-ch'un was extensively reorganized (*JMJP*, 22 May 1960), with assembly operations apparently reduced in order to expand production of spare parts (*Ibid.*, 17 May 1961) and gasoline engines for mining locomotives (Radio Peking, 3 Oct 1960).

1962–64: As of Sep 1964, total output was running at an annual rate that was 2.7 times that of 1957; 1964 output, hence, was 2.7 x 7,500 = 20,300 (*SCMP*, No. 3306, 28 Sep 1964, p. 16). Total output in 1964 rose by more than 20% over that of 1963; 20,300/1.21 = 16,800 (*Ibid.*, No. 3391, 5 Feb 1965, p. 1). Total output in the first eight months of 1963 was double that of the same period in 1962; assuming this rate was maintained, 1962 output must have been around 16,800/2 = 8,400 (*CHKY*, 10 Oct 1963, p. 3). At Ch'ang-ch'un, output in 1964 was the highest ever—a minimum of 19,500 is assumed (*NCNA*, Peking, 30 May 1965). Output in 1963 at the Shanghai Truck Plant was about 600 units; so output at Ch'ang-ch'un was 16,800–600 = 16,200 units (*La Citta Futura*, Rome, No. 12–13, Jul-Aug 1965, pp. 14–16). Output at Ch'ang-ch'un in the first nine months of 1963 increased by 123% over the same period in 1962; assuming that rate was maintained, output in 1962 was 16,200/2.23 = 7,300 (*Wen-hui pao*, Hong Kong, 4 Oct 1963, p. 2).

1965–66: Output at Ch'ang-ch'un in 1965 rose by 10.8% over that of 1964; 1.41 x 19,500 = 27,500 (*CKHW*, 12 Apr 1966, p. 1). Total output is estimated to have risen to at least 30,000. Output at Ch'ang-ch'un in the first 11 months of 1966 was 36.3% higher than in all of 1965; assuming 36% for the year, 1.36 x 27,500 = 37,400 (*SCMP*, No. 3839, 13 Dec 1966, p. 21). Production at other plants in Shanghai, Nanking, Tientsin, and Tsinan is estimated at 5,600; hence total output was about 43,000 units.

1967–68: Figures are rough estimates based on fragmentary reports of work stoppages in Ch'ang-ch'un and elsewhere (see, e.g., *FBIS*, 15 May 1967, p. ddd22).

1969–73: A visiting foreign industrial group was told that total output in 1969 was 55,000 to 65,000 units (*American Machinist*, 27 Dec 1971, p. 21). Output at Ch'ang-ch'un in 1970 surpassed the plant's designed capacity by 67% (*PR*, 13 Aug 1971, p. 30); since the original capacity was 30,000 units, output in 1970 was 30,000 x 1.67 = 50,000. Output at Ch'ang-ch'un increased by 20% in 1971 (*JPRS*, No. 58070, 26 Jan 1973, p. 1); 50,000 x 1.2 = 60,000. Output at Ch'ang-ch'un in 1972 was 69.8% higher than in 1965 (*FBIS*, 27 Jul 1973, p. G2); 1.7 x 27,500 = 47,000. Output at Ch'ang-ch'un in the first six months of 1973 was 7.8% above that in the same period in 1972 (*Ibid.*); assuming 7% for the year, 1.07 x 47,000 = 50,000. Total output is estimated to have grown much faster than output at Ch'ang-ch'un during this period because of the proliferation of small-scale plants engaging in batch production of motor vehicles. By 1970 the Chinese reported that "cars and trucks are not only produced in large modern plants but over 20 provinces, cities, and autonomous regions have plants of their own turning out mostly trucks for local use under local conditions" (*CR*, Oct 1970, pp. 32–34).

Table 8

Production of Telecommunications Equipment

Thousand Units

| | Radio Sets | Television Sets | | Radio Sets | Television Sets |
|---|---|---|---|---|---|
| 1953 | 25 | .... | 1964 | 1,000 | 5 |
| 1954 | 28.5 | .... | 1965 | 1,000 | 5 |
| 1955 | 123 | .... | 1966 | 1,000 | 8 |
| 1956 | (220) | .... | 1967 | 1,000 | 5 |
| 1957 | 390 | .... | 1968 | 1,000 | 5 |
| 1958 | 1,200 | .... | 1969 | 1,000 | 10 |
| 1959 | 1,560 | .... | 1970 | 3,800 | 15 |
| 1960 | 1,500 | .... | 1971 | 4,000 | 20 |
| 1961 | 1,250 | 2 | 1972 | 4,480 | 40 |
| 1962 | 1,000 | 3 | 1973 | 8,060 | 75 |
| 1963 | 1,000 | 3 | | | |

Notes and sources:

Radio sets

1953, 1957, 1960: Output in 1960 "was over 60 times more than in 1953" (*SCMP*, No. 2439, 17 Feb 1961, p. 10-11) and in 1957 and 1960 it amounted to 390,000 and 1,500,000 sets, respectively (*NCNA*, Peking, 8 Nov 1961); hence, output in 1953 was 1,500,000/60 = 25,000 sets.

1954: *KJJP*, 16 Jun 1958.

1955–56: Output in 1957 was 170,000 sets greater than in 1956 (*SCMP*, No. 1684, 6 Jan 1958, p. 5)—390,000 − 170,000 = 220,000 sets in 1956. Output in 1956 was 79% greater than in 1955 (Radio Peking, 9 Mar 1957)—220,000/1.79 = 123,000.

1958: *NCNA*, 9 Nov 1959.

1959: According to *Wu-hsien-tien* (*Radio*), No. 2, Feb 1960, at the end of 1959, output was four times that in the last stage of the First Five-Year Plan (assumed to refer to 1957).

1961–69: Estimated from fragmentary press reports on output trends in major radio plants.

1970: Sales of transistor radios increased by 280% compared with sales in 1969 (*BBC*/SWB/FE/W604/A/13, 13 Jan 1971); on the assumptions that sales equaled domestic production and that transistor radios made up 75% of production in 1965 and 95% in 1969–70:

| | Total | Transistor Radios | Tube Radios |
|---|---|---|---|
| 1965 | 1,000,000 | 750,000 | 250,000 |
| 1969 | 1,000,000 | 950,000 | 50,000 |
| 1970 | 3,800,000 | 3,600,000 | 200,000 |

1971: Output was four times that of 1965 (*FBIS*, 19 May 1972, p. B2).

1972: Output increased by 12% over 1971 (*FBIS*, 7 Aug 1973, p. B5).

1973: Assumes an 80% increase based on a report that output increased by 83.2% in the first five months (*FBIS*, 7 Aug 1974, p. B5).

Television sets

1961–71: Estimated from fragmentary reports on output trends in major television plants. China reportedly had 20,000 sets in use throughout the country in 1960 (*TKP*, Hong Kong, 4 Sep 1960) and 100,000 sets in use in 1971 (*South China Morning Post*, Hong Kong, 29 Nov 1972). Since China did not begin series production of television sets until 1961, the sum of the 20,000 sets (mostly imported) in 1960 and the accummulative production in 1961–71 should approximate 100,000 sets. The estimates do, in fact, sum to 101,000 sets.

1972–73: Output rose by 100% in 1972 and by 88.8% in the first few months of 1973 (*FBIS*, 7 Aug 1973, p. B5). The increase for 1973 is assumed to have been maintained throughout the year.

Table 9

Production of Consumer Products

Thousand Units

| | Bicycles | Thermos Bottles | Clocks | Watches | |
|---|---|---|---|---|---|
| | | | | Total | Shanghai |
| 1949 | 14 | .... | .... | .... | .... |
| 1950 | 21 | .... | .... | .... | .... |
| 1951 | 44 | .... | .... | .... | .... |
| 1952 | 80 | 5,536 | 152 | .... | .... |
| 1953 | 165 | 12,007 | 306 | .... | .... |
| 1954 | 298 | 14,841 | 578 | .... | .... |
| 1955 | 335 | 17,958 | 812 | .... | .... |
| 1956 | 640 | 16,310 | 1,699 | .... | 0.4 |
| 1957 | 806 | 20,870 | 2,040 | .... | .... |
| 1958 | 1,174 | 27,611 | 3,068 | .... | 13.0 |
| 1959 | 1,479 | 37,000 | 5,700 | .... | 74.0 |
| 1960 | 1,840 | .... | .... | 650 | 450.0 |
| 1961 | 634 | .... | .... | .... | 545.0 |
| 1962 | 1,000 | .... | 5,000 | .... | .... |
| 1963 | 1,101 | 33,216 | .... | .... | .... |
| 1964 | 1,209 | .... | .... | .... | .... |
| 1965 | 1,792 | .... | .... | 1,200 | 840.0 |
| 1966 | 2,044 | .... | .... | .... | 925.0 |
| 1968 | 2,412 | .... | .... | .... | .... |
| 1969 | 3,026 | .... | .... | .... | .... |
| 1970 | 3,640 | .... | .... | .... | .... |
| 1971 | 4,030 | .... | .... | 6,200 | 2,500.0 |
| 1972 | 4,300 | .... | .... | 6,950 | 2,500.0 |
| 1973 | 4,859 | .... | .... | 7,800 | 2,650.0 |

Notes and sources:

Bicycles

1949–58: *TGY*, p. 99.

1959: An estimated 25% increase, the increase as estimated for Shanghai—262,000 units in 1958 and 330,000 in 1959 (*NCNA*, Peking, 3 Jan 1958 and 27 Dec 1960; *JPRS*, No. 4748, 30 Jun 1961).

1960: Output increased 22-fold compared with that in 1952 (*Wen-hui pao*, Hong Kong, 21 Mar 1961, p. 1) and was more than 20% greater than in 1959 (*SCMM*, No. 256, p. 21).

1961–62: Output in 1962 was estimated from data on five major plants (*SCMP*, No. 2827, 29 Sep 1962). Output in 1961 was estimated from a report that, in Shanghai, output in the first seven months of 1962 amounted to 92% of total output in 1961 (*NCNA*, Shanghai, 22 Dec 1962)—7/12 x 1/0.92 x 1,000,000 = 634,000.

1963: Assumes that the 10.1% increase reported for the first six months (*FBIS*, 13 Jul 1963, pp. ccc8–ccc9) was maintained throughout the year.

1964: Market supply was 50% greater than in 1957 (*FBIS*, 31 Dec 1964, p. ccc2).

1965, 1971–72: Output in 1971 was five times that of 1957—5 x 806 = 4,030 (*PR*, 13 Oct 1972, p. 11). Output in 1972 was 6.7% above that in 1971—1.067 x 4,030 = 4,300 (*FBIS*, 19 Mar 1973, p. B5). Output in 1972 was 2.4 times that in 1965—4,300/2.4 = 1,792 (*FBIS*, 24 Oct 1973, p. B13).

1966: An estimated 11% increase over 1960, the same increase as reported for Shanghai—495,000 units in 1960 and 550,000 in 1966 (*NCNA*, Peking, 27 Dec 1960 and *CKHW*, 21 Oct 1966, p. 10).

1968: Assumes that the 18% increase in the first half of the year compared with the previous peak output for that period (1966) was maintained throughout the year (*FBIS*, 10 Jul 1968, p. B4).

1969: Interpolated between 1968 and 1970.

1970: Output was 260 times that in 1949 (*CR*, Feb 1972, p. 47).

1973: Output in the first eight months was 13% above that in the same period of 1972 (*FBIS*, 24 Oct 1973, p. B13).

Thermos bottles

1952: *CKCKY*, No. 20, 1957, pp. 2–4.

1953–55: *Ibid.*, No. 16, 1957, p. 13.

1956–57: *Ibid.*, No. 5, 1959, p. 3.

1958–59: *SCMP*, No. 2192, 9 Feb 1960, p. 13, and *CB*, No. 618, 17 May 1960, p. 1.
1963: *SCMM*, No. 446, 7 Dec 1964, p. 35.

Clocks

1952: *CKCKY*, No. 20, 1957, pp. 2–4.
1953–56: Calculated from percentage figures in *CKCKY*, No. 16, 1957, p. 11.
1957–58: *JPRS*, No. 3243, 13 May 1960.
1959: *SCMP*, No. 2192, 9 Feb 1960.
1962: *Ibid.*, No. 2806, 24 Aug 1962.

Watches

Shanghai

The figures for Shanghai probably are for Shanghai Watch Plant No. 1. Total output from all watch manufacturing plants in the city was 3,040,000 units in 1973 (*FBIS*, 17 Oct 1974, p. G5).
1956: Trial production (*NCNA*, Shanghai, 21 Mar 1957)—mass production did not begin until 1958.
1958–60: *Chih-fang chih-pao*, Shanghai, 11 Dec 1961, p. 2.
1961: *Ibid.*, also gave an 11-month figure of 500,000 for 1961 - this was extrapolated to 12 months.
1965: Derived from an estimated increase of 10% for 1966.
1966, 1972: Output in 1972 was 2.5 million, a 1.7-fold increase over 1966 (*TKP*, Hong Kong, 13 May 1973, p. 3); hence, output in 1966 = 2.5/2.7 = 0.925 million.
1971: *CR*, Feb 1972, p. 48.
1973: *FBIS*, 23 Sep 1974, p. G3.

Total

1960: Planned production (*SCMP*, No. 2298, 15 Jul 1960).
1965: Derived by adding an estimated 850,000 for Shanghai as a whole, 153,500 for the Tientsin plant (Barry M. Richman, *A First Hand Study of Industrial Management in Communist China*, University of California, Los Angeles, 1967, p. 61), and at least 100,000 from a new plant in Nanking.
1971–72: Output in 1972 was 5.8 times that in 1965 (*FBIS*, 24 Oct 1973, p. B13)—1,200 x 5.8 = 6,950—and 12% above that in 1971 – 6,950/1.12 = 6,200.
1973: Assumes that the 12% increase in the first eight months was maintained throughout the year (*FBIS*, 24 Oct 1973).

# APPENDIX A

## Merchant Shipbuilding

The Chinese have released a good deal of information about their merchant shipbuilding industry, but most of it is fragmentary and restricted to announcements of the launchings of major new vessels. Virtually the sum total of official aggregative statistics on nonnaval shipbuilding is arrayed in Table A-1. In filling the gaps in Table A-1 and extending the time series through 1959–73, several simplifying assumptions and adjustments had to be made. The methodology is explained step by step in the footnotes to Tables A-2 through A-4 and is briefly summarized here.

The first step involved the choice of an appropriate unit of measurement. Tonnage in terms of light ship displacement (LSD) was selected because it is the best measure for use in estimating construction costs. LSD of a vessel is calculated by subtracting the deadweight (DWT) tonnage from the full load displacement (FLD) tonnage. LSD is, in short, the weight of the ship fully equipped and ready for sea but empty (or "light") of cargo, passengers, stores, fuel, or fresh water.* LSD for the missing years 1953–55 and 1957–58 was derived by extrapolation (see Table A-2).

*Examples of Chinese use of the units FLD, DWT, and LSD can be found in *Chung-kuo tsao-ch'uan* (*China Shipbuilding*), Shanghai, No. 4, 15 Oct 1959 (translated in *JPRS* 2850, 17 Jun 1960).

**Table A-1**

**Official Statistics on the Production of Merchant Vessels**

**Tons**

| | FLD [1] | DWT [2] | LSD [3] |
|---|---|---|---|
| 1952 | 21,485 | 16,000 | (5,485) |
| 1953 | .... | 35,000 | .... |
| 1954 | .... | 62,000 | .... |
| 1955 | .... | 120,000 | .... |
| 1956 | 160,919 | 104,000 | (56,919) |
| 1957 | .... | 54,000 | .... |
| 1958 | .... | 90,000 | .... |
| 1959 | .... | 122,300 [4] | .... |
| 1960 | .... | 168,000 [5] | .... |

[1] *Past and Present*, p. 123.

[2] *TGY*, p. 98.

[3] Calculated from the equation FLD − DWT = LSD.

[4] Planned production (*CHKYCP*, 1 Oct 1959, p. 4).

[5] Planned production of "ships and barges" was to be 37% higher than actual production in 1959 (*PR*, 5 Apr 1960, p. 12). Actual production in 1959-60 was not reported.

**Table A-2**

**Estimated Production of Merchant Vessels**

**Thousand Tons**

| | FLD [1] | DWT [1] | LSD [2] | LSD of Work Done [3] | LSD/DWT Ratio |
|---|---|---|---|---|---|
| 1951 | Negl. | Negl. | Negl. | Negl. | .... |
| 1952 | 21.5 | 16 | (5.5) | (6.1) | (0.34) |
| 1953 | .... | 35 | (13.5) | (11.8) | (0.39) |
| 1954 | .... | 62 | (26.9) | (31.4) | (0.43) |
| 1955 | .... | 120 | (58.4) | (50.2) | (0.49) |
| 1956 | 160.9 | 104 | (56.9) | (51.4) | (0.55) |
| 1957 | .... | 54 | (33.2) | (46.4) | (0.61) |
| 1958 | .... | 90 | (62.2) | (56.6) [4] | (0.69) |

[1] From Table A-1.

[2] The figures for 1952 and 1956 were taken from Table A-1, and those for 1953–55 and 1957–58 are estimates extrapolated by the Kaplan-Moorsteen method (Norman M. Kaplan and Richard H. Moorsteen, *Indexes of Soviet Industrial Output*, Santa Monica, 1960).

[3] These estimates of work actually done in each year were derived as a three-year moving average of LSD in which estimates for production during the preceding and following years were each weighted by 0.25 and production during the current year by 0.50.

[4] In deriving the moving average, LSD in 1959 was taken from Table A-1. LSD of major ships (25.6) was added to LSD of minor vessels (43.0) to obtain total LSD (68.6). Thus, work actually done in 1958 was calculated as follows: 0.25 x 33.2 + 0.5 x 62.2 + 0.25 x 68.6 = 56.6. Note that, for minor vessels, it is assumed that LSD of ships launched = LSD of work done.

LSD figures so derived were then adjusted to account for the fact that the actual work of construction and fitting-out in shipbuilding is usually spread over a year or more. Accordingly, LSD in "work done" terms was estimated by use of a three-year moving average in which one-fourth of the work done each year was allocated to the preceding and following years and one-half to the current year.*

Derivation of LSD estimates for later years required much more complicated procedures. Essentially, the "hard core" of the estimates was China's sporadic announcements of major ships completed. For example, official sources reported the launching in 1958 of the *Ho P'ing 28*, an oceangoing freighter with a FLD of 8,730 tons and a DWT capacity of 5,000 tons.** The sum of other such tonnages for specific ships announced in 1958 was about 37,200 DWT tons, or about 40% of China's total DWT tonnage reported for that year. In 1959, similar reports yielded a DWT figure of some 37,700 tons, or about 30% of the planned total production of 122,300 tons. Based on these percentages, it was assumed that the DWT of announced major ship launchings typically constituted one-third of total merchant shipbuilding for 1959–73 and that barges, tugs, and other smaller vessels accounted for the other two-thirds.

With estimates of the minimum DWT tonnages of major ships launched each year, a technique had to be developed for converting DWT into LSD tonnages. On the basis of the relationships detailed in Table A-3, the average LSD was assumed to represent 68% of DWT. Derivation of the estimates for total output of merchant ships for 1959–73 is explained in the footnotes to Table A-4.

As a rough test of feasibility, the estimates were compared with a somewhat ambiguous Chinese claim that ships built *in each* of the years 1971–73 exceeded in tonnage China's total for the preceding decade.*** The estimates are in close agreement with the Chinese claim if the statement is interpreted to mean that total tonnage for the *entire period* 1971–73 exceeded the total for 1961–70. The estimates show a total of 804,200 DWT for 1971–73 and 766,600 DWT for 1961–70. Clearly, the phrase "in each year" is a mistake in translation; for that to be true, output in 1971, 1972, and 1973 would have to be enormous and output in 1961–70 would have to be almost negligible.

*Cf. Robert Michael Field, "The Chinese Machine-Building Industry: A Reappraisal," *China Quarterly*, No. 54, Apr–Jun 1973, pp. 313–314.

**JPRS, No. 514-D, 3 Feb 1959.

***PR, 15 Feb 1974, p. 22.

**Relationships Among Full Load Displacement, Light Ship Displacement, and Deadweight Tonnages of Chinese Merchant Vessels**

| Type of Ship and Year of Launching | Tons | | | LSD/DWT Ratio |
|---|---|---|---|---|
| | FLD | DWT | LSD | |
| Oil barge, 1955[1] | 5,100 | 3,700 | 1,400 | 0.38 |
| Small tanker, 1971[2] | 7,800 | 5,000 | 2,800 | 0.56 |
| Ocean tanker, 1969[3] | 22,000 | 15,000 | 7,000 | 0.47 |
| Train ferry, 1957[4] | 4,950 | 2,416 | 2,534 | 1.05 |
| Train ferry, 1959[5] | 5,090 | 2,878 | 2,212 | 0.77 |
| River freighter, 1953[6] | 2,700 | 1,800 | 900 | 0.50 |
| River freighter, 1954[7] | 2,000 | 1,000 | 1,000 | 1.00 |
| Coastal freighter, 1959[8] | 4,850 | 3,465 | 1,385 | 0.40 |
| Ocean freighter, 1958[9] | 8,730 | 5,000 | 3,370 | 0.67 |
| Ocean freighter, 1958[10] | 22,100 | 13,400 | 8,700 | 0.65 |
| Ocean freighter, 1959[11] | 9,420 | 5,000 | 4,420 | 0.88 |
| Ocean freighter, 1965[12] | 18,800 | 11,700 | 7,100 | 0.61 |
| Ocean freighter, 1967[13] | 19,000 | 13,000 | 6,000 | 0.46 |
| Ocean freighter, 1970[14] | 20,000 | 12,600 | 7,400 | 0.59 |
| Ocean freighter, 1973[15] | 22,000 | 13,000 | 9,000 | 0.69 |
| Small liner/freighter, 1958[16] | 2,650 | 1,000 | 1,650 | 1.65 |
| **Total for the year** | | | | |
| **1952**[17] | **21,485** | **16,000** | **5,485** | **0.34** |
| **1956**[17] | **160,919** | **104,000** | **56,919** | **0.55** |
| **Average of LSD/DWT ratios** | .... | .... | .... | **0.68** |

[1] Tonnages were estimated from a photograph in *PC*, 16 Jan 1956, p. 19.

[2] The *Ta Ch'ing 409*, built by the Jung-hsing Shipyard in Tsingtao (*BBC*/SWB/FE/W630/A/9, 14 Jul 1971).

[3] The *Ta Ch'ing 27*, built by the Hung-ch'i (Red Flag) Shipyard in Dairen. For photos and details of this ship and others of the same class, see *CR*, Aug 1969, pp. 2, 4; *CP*, No. 11, 1969, pp. 4, 5, 11, and No. 9, 1971, p. 16; *SCMP*, No. 4514, 10 Oct 1969, pp. 10-11; *BBC*/SWB/FE/W611/A/8; and *PR*, 24 Dec 1971, p. 21.

[4] The *Shanghai*, built by the Chiang-nan Shipyard in Shanghai. See *JPRS*, No. 2850, 17 Jun 1960, pp. 59–61; *SCMP*, No. 1937, 20 Jan 1959, p. 30; and *SCMP*, No. 1955, 17 Feb 1959, p. 26.

[5] The *Kiangsu* and *Chin Ling*, identical ships built by the Chiang-nan Shipyard in Shanghai. See the sources in footnote 4.

[6] The *Ta Chung*, built by the Chung-hua Shipyard in Shanghai. See *Chugoku keizai no genjo to tembo* (*Present Condition and Future Prospects of China's Economy*), 1971 edition, published by the China Economy Research Bureau of Fuji Journal, Japan, p. 68; hereafter referred to as *Present Condition*.

[7] The *Jen Min 1*, built by the Hu-tung Shipyard in Shanghai. See *Present Condition*, p. 68.

[8] The *Ho P'ing 49*, built by the Shanghai Shipyard in Shanghai. For photos and details, see *JPRS*, No. 2850, 17 Jun 1960, pp. 1-49, and *SCMP*, No. 1955, 17 Feb 1959, pp. 25–26.

[9] The *Ho P'ing 25*, built by the Hung-chi Shipyard in Dairen. For photos and details, see *JPRS*, No. 514-D, 3 Feb 1959, p. 1; *CP*, Dec 1958, p. 31; *CR*, Nov 1963, pp. 6–10; *PR*, 13 May 1958, p. 5; and *PR*, 30 Sep 1958, p. 17.

[10] The *Yueh Chin*, built by the Hung-chi Shipyard in Dairen. For photos and details, see *CP*, 5 Jan 1959, pp. 24–25, and *PR*, 16 Dec 1958, p. 15.

[11] The *Ho P'ing 58*, built by the Chiang-nan Shipyard in Shanghai. For photos and details, see *SCMP*, No. 2139, 19 Nov 1959, p. 22; *CP*, 20 Oct 1959, p. 34; and *Evergreen*, Peking, No. 3, 1964, pp. 25–26.

[12] The *Tung Feng*, built jointly by the Chiang-nan and Hu-tung Shipyards in Shanghai. Several years were required to make this ship operational. For photos and details, see *SCMP*, No. 2246, 28 Apr 1960, p. 27; *PR*, 10 May 1960, p. 4; *CR*, Jun 1968, pp. 25–28, 44, and back cover; and *CP*, No. 6, 1968, pp. 20–23.

[13] The *Ch'ao Yang*, built by the Chiang-nan Shipyard in Shanghai. For photos and details, see *China's Foreign Trade*, Peking, No. 1, 1974; *JMJP*, 14 Jan 1967, p. 3; *CP*, No. 4, 1967; *CR*, Apr 1967, pp. 1, 28, and inside back cover; and *Present Condition*, p. 69.

[14] The *Feng Lei*, built by the Shanghai Shipyard in Shanghai. For photos and details, see *JMJP*, 10 May 1970, p. 2; *CR*, Sep 1970, pp. 26–28; and *FBIS*, 13 May 1970, p. C8.

[15] The *Feng Ching*, built by the Chiang-nan Shipyard in Shanghai. For photos and details, see *JMJP*, 5 Nov 1974, p. 4; *FBIS*, 10 Oct 1974, pp. E1–2; and *FBIS*, 5 Nov 1974, pp. E1–6.

[16] The *Min Chu 10* and *Min Chu 11*, identical ships built by the Chiang-nan Shipyard in Shanghai. For photos and details, see *PC*, 1 Dec 1955, p. 5; *PC*, 16 Jan 1956, p. 19; and *JPRS*, No. 488-D, 9 Jan 1959, pp. 2–3.

[17] From Table A-1.

Table A-4

Estimated Production of Merchant Vessels

Thousand Tons

| | Major Ships | | | Minor Vessels | | Total | |
|---|---|---|---|---|---|---|---|
| | DWT of Ships Launched [1] | LSD of Ships Launched [2] | LSD of Work Done [3] | LSD of Work Done [4] | DWT of Ships Launched [5] | DWT of Ships Launched [6] | LSD of Work Done [7] |
| 1959 | 37.7 | 25.6 | 21.5 | 43.0 | 63.2 | 100.9 | 64.5 |
| 1960 | 13.7 | 9.3 | 13.8 | 27.6 | 40.6 | 54.3 | 41.4 |
| 1961 | 16.2 | 11.0 | 9.4 | 18.8 | 27.6 | 43.8 | 28.2 |
| 1962 | 9.4 | 6.4 | 7.6 | 15.2 | 22.3 | 31.7 | 22.8 |
| 1963 | 10.0 | 6.8 | 8.6 | 17.2 | 25.3 | 35.3 | 25.8 |
| 1964 | 20.9 | 14.2 | 11.4 | 22.8 | 33.5 | 54.4 | 34.2 |
| 1965 | 15.5 | 10.5 | 9.7 | 19.4 | 28.5 | 44.0 | 29.1 |
| 1966 | 5.3 | 3.6 | 6.6 | 13.2 | 19.4 | 24.7 | 19.8 |
| 1967 | 13.0 | 8.8 | 7.5 | 15.0 | 22.0 | 35.0 | 22.5 |
| 1968 | 13.0 | 8.8 | 16.6 | 33.2 | 48.8 | 61.8 | 49.8 |
| 1969 | 59.0 | 40.1 | 36.2 | 72.4 | 106.4 | 165.4 | 108.6 |
| 1970 | 82.3 | 56.0 | 64.4 | 128.8 | 189.3 | 271.6 | 193.2 |
| 1971 | 155.2 | 105.5 | 77.3 | 154.6 | 227.3 | 382.5 | 231.9 |
| 1972 | 62.0 | 42.2 | 54.4 | 108.8 | 159.9 | 221.9 | 163.2 |
| 1973 | 41.0 | 27.9 | 53.6 | 107.2 | 157.6 | 198.6 | 160.8 |
| 1974 | 171.0 | 116.3 | .... | .... | .... | .... | .... |

[1] These estimates should be considered minimum totals. They were compiled by adding up the tonnages of major ship launchings announced each year by the following Chinese newspapers and periodicals: *CP*, *CR*, *Evergreen*, *JMJP*, *PR*, and *TKP*. This information from direct sources was supplemented by translations of Chinese publications and monitored radio broadcasts by the *JPRS*, *SCMP*, *FBIS*, and *BBC*.

[2] Derived by multiplying column 1 by 0.68, the arithmetical mean of the 18 LSD/DWT ratios calculated in Table A-3.

[3] Derived by the moving average method described in footnote 3 in Table A-2.

[4] Derived by multiplying column 3 by 2.0. The assumption here is that work done on major ships typically accounts for one-third of total work done in any given year. This is based on the estimates for 1958–59, in which DWT of major ships launched accounted for about 30%-40% of total reported (1958) and planned (1959) production.

[5] Derived by multiplying column 4 by 1.47, the reciprocal of the 0.68 figure used in column 2 (LSD = 0.68 x DWT; DWT = 1.47 x LSD).

[6] Derived by adding column 1 to column 5.

[7] Derived by adding column 3 to column 4.

# APPENDIX B

**Major Divisions of the Metal Processing Sector**[1]

| Category Number | | Category | Code Number |
|---|---|---|---|
| I | | Power equipment | 215–21842 |
| | 1 | Steam boilers | 2151–2155 |
| | 2 | Boiler accessory equipment | 2156 |
| | 3 | Steam turbines | 2159 21615 |
| | 4 | Hydroturbines | 2162–21624 |
| | 5 | Steam engines | 2163–21632 |
| | 6 | Portable steam engines | 2164–21642 |
| | 7 | Internal combustion engines | 2165–2172 |
| | 8 | Gas producers | 2173 |
| | 9 | Electric generators | 2175–217723 |
| | 10 | Electric motors | 2181–21842 |
| II | | Electric equipment | 220–22475 |
| | 1 | Transformers | 2201–22033 |
| | 2 | Mutual inductors for instruments | 2205 22052 |
| | 3 | Switching equipment | 2216 22164 |
| | 4 | Starting and control equipment | 2219–22214 |
| | 5 | Safety equipment | 2225–22294 |
| | 6 | Rectifying equipment | 2231–22317 |
| | 7 | Electrical appliances | 2234–22363 |
| | 8 | Electric light bulbs | 2238–2242 |
| | 9 | Storage batteries | 2245–22457 |
| | 10 | Dry batteries | 2247–22475 |
| III | | Metal-cutting machine tools | 225–23083 |
| | 1 | Lathes | 2251–2259 |
| | 2 | Borers | 2261–22612 |
| | 3 | Drills | 2263–2267 |
| | 4 | Planers | 2271–2273 |
| | 5 | Slotters | 2274 |
| | 6 | Milling machines | 2276–2284 |
| | 7 | Drawing benches | 2238 |
| | 8 | Gear makers | 2291–2295 |
| | 9 | Grinders | 2301–23019 |
| | 10 | Thread cutters | 2303 23033 |
| | 11 | Tool grinders | 2305 23054 |
| | 12 | Metal saws | 2306 23063 |
| | 13 | Other metal-cutting machine tools | 2307 |
| | 14 | Electric spark machine tools | 2308–23083 |
| IV | | Forging and pressing equipment | 231–2348 |
| | 1 | Forge hammers | 2311–2314 |
| | 2 | Presses | 2316–2320 |
| | 3 | Forges | 2341–23412 |
| | 4 | Punch presses | 2342 |
| | 5 | Shears | 2343–23433 |
| | 6 | Forming machines | 2344–23445 |
| | 7 | Tube drawing benches | 2348 |
| V | | Casting equipment | 236–2366 |
| VI | | Geological prospecting equipment | 240–24512 |
| | 1 | Testing drills | 2401–24015 |
| | 2 | Manual punch-drill testing drills | 2402 |
| | 3 | Hand-operated testing drills | 2403 |
| | 4 | Hydrologic drills | 2451–24512 |
| VII | | Water conservation construction equipment | 246–2461 |
| VIII | | Ore dressing and washing equipment | 249–25012 |
| | 1 | Dressing equipment | 2491–24916 |
| | 2 | Sintering equipment | 2501–25012 |
| IX | | Metallurgical equipment | 251–2551 |
| | 1 | Metallurgical equipment for the ferrous metals industry | 2511 25121 |

Major Divisions of the Metal Processing Sector[1] (Continued)

| Category Number | Category | Code Number |
|---|---|---|
| 2 | Steel refining equipment | 2515–25151 |
| 3 | Steel rolling equipment | 2517–2521 |
| 4 | Other metallurgical equipment | 2551 |
| X | Coking equipment | 258–2584 |
| XI | Coal industry equipment | 260–26261 |
| 1 | Excavation machinery | 2601–2613 |
| 2 | Loading and transport equipment | 2621–26252 |
| 3 | Ventilation equipment | 2626–26261 |
| XII | Petroleum industry equipment | 265–2683 |
| 1 | Well drilling rigs | 2651 |
| 2 | Pumping well rigs | 2652 |
| 3 | Well drilling tools | 2653 |
| 4 | Oil well salvage (fish-up) tools | 2654 |
| 5 | Gusher prevention machinery | 2655 |
| 6 | Oil and gas extraction machinery | 2656 |
| 7 | Petroleum refining machinery | 2657–26574 |
| 8 | Gas station machinery | 2681–26812 |
| 9 | Barrel manufacturing machinery | 2682 |
| 10 | *T"ing* manufacturing equipment | 2683 |
| XIII | Chemical industry equipment | 269–2786 |
| 1 | Evaporation equipment | 2691–26954 |
| 2 | Absorption towers | 2698–26982 |
| 3 | Distillation equipment | 2701–27013 |
| 4 | Mixing equipment | 2704–2707 |
| 5 | Filtration equipment | 2711–2713 |
| 6 | Mechanical separation equipment | 2715–2718 |
| 7 | Drying equipment | 2721–2725 |
| 8 | Heating and cooling equipment | 273–2732 |
| 9 | Crystallization equipment | 274–2741 |
| 10 | Reaction equipment | 275–2754 |
| 11 | Mechanical furnaces for the chemical industry | 2761 |
| 12 | Other machinery | 278–2786 |
| XIV | Glass industry equipment | 281–2819 |
| XV | Building materials and refractory materials industry equipment | 291–29156 |
| 1 | Forming machines | 2911–29114 |
| 2 | Mechanical kilns | 2912–29122 |
| 3 | Drying machinery; cement kilns | 2914–29143 |
| 4 | Clay-working machinery | 2915–29156 |
| XVI | Lumbering and lumber milling equipment | 295–2981 |
| 1 | Lumbering machinery | 2951–29516 |
| 2 | Lumber making machinery | 2955–29564 |
| 3 | Lumber milling machinery | 2961–29619 |
| 4 | Pressed-board manufacturing machinery | 2981 |
| XVII | Paper industry equipment | 300–30068 |
| 1 | Raw material processing machinery | 3001–30016 |
| 2 | Pulp machinery | 3004–30045 |
| 3 | Papermaking machinery | 3006–30068 |
| XVIII | Match industry equipment | 3011–30119 |
| XIX | Weaving, knitting, sewing, and printing and dyeing industries equipment | 304–3225 |
| 1 | Cotton textile machinery | 305–30819 |
| 2 | Wool textile machinery | 310–3106 |
| 3 | Hemp textile machinery | 311–3116 |
| 4 | Silk textile machinery | 315–3195 |
| 5 | Knitting and sewing machinery | 320–32151 |
| 6 | Printing and dyeing machinery | 322–3225 |
| XX | Tanning and shoe industry equipment | 323–32512 |
| 1 | Tanning machinery | 3231–32322 |
| 2 | Shoe manufacturing machinery | 3251–32512 |

Major Divisions of the Metal Processing Sector[1] (Continued)

| Category Number | Category | Code Number |
|---|---|---|
| XXI | Printing industry equipment | 328–32917 |
| 1 | Type foundry machinery | 3281–32814 |
| 2 | Printing machinery | 3285–32855 |
| 3 | Lithographic plate machinery | 3288–32887 |
| 4 | Bindery machinery | 3291–32917 |
| XXII | Food industry equipment | 333–35316 |
| 1 | Flour milling machinery | 3331–33322 |
| 2 | Edible oils and fats industry machinery | 3351–33534 |
| 3 | Sugarmaking machinery | 3355–33561 |
| 4 | Rice milling machinery | 3381–33814 |
| 5 | Can manufacturing machinery | 3402–340215 |
| 6 | Noodle products machinery | 3421–34213 |
| 7 | Tobacco manufacturing machinery | 3451–34519 |
| 8 | Tea processing machinery | 3471–34712 |
| 9 | Distilling machinery | 3491–34916 |
| 10 | Egg processing machinery | 3511–35114 |
| 11 | Cold drink and icemaking machinery | 3531–35316 |
| XXIII | Rubber industry equipment | 362–36371 |
| 1 | Rubber preparation machinery | 3621–36212 |
| 2 | Masticating machinery | 3623–36233 |
| 3 | Forming machinery | 3625–36254 |
| 4 | Vulcanizing machinery | 3631–36311 |
| 5 | Cutting machinery | 3634–36344 |
| 6 | Extrusion machinery | 3635–36352 |
| 7 | Scraping machinery | 3637–36371 |
| XXIV | Specialized equipment for other industries | 3651–3704 |
| 1 | Wire and nail making machinery | 3651–36514 |
| 2 | Electric wire making machinery | 3671–36715 |
| 3 | Bicycle making machinery | 3691–36913 |
| 4 | Other specialized machinery | 370–3704 |
| XXV | Construction and roadbuilding machinery | 390–3923 |
| XXVI | Agricultural machinery | 395–3984 |
| 1 | Tilling tools | 3951–39552 |
| 2 | Sowing machinery | 3957–3961 |
| 3 | Cultivating machinery | 3962–3961 |
| 4 | Harvesting machinery | 3971–3975 |
| 5 | Fertilizer applicators | 3976–39762 |
| 6 | Pesticide machinery | 3978–39783 |
| 7 | Irrigation water-lifting machinery | 3979–39792 |
| 8 | Fodder machinery | 3980–39804 |
| 9 | Grain sorting machinery | 3981 |
| 10 | Processing machinery | 3982–398242 |
| 11 | Windmills | 3984 |
| XXVII | Tractors | 399–39983 |
| | a. 15-horsepower units | 3991 |
| | b. Actual units | 3992 |
| 1 | Caterpillar tractors | 3993–39933 |
| 2 | Wheeled tractors | 3995–39983 |
| XXVIII | Railroad rolling stock and equipment | 401–40421 |
| 1 | Steam locomotives | 4011–40123 |
| | Steam locomotives, by type | 4012 |
| 2 | Diesel locomotives | 4015 |
| 3 | Electric locomotives | 4016 |
| 4 | Passenger cars | 4017–40178 |
| 5 | Freight cars | 4021–40226 |
| 6 | Parts for locomotives, passenger and freight cars | 4025–40281 |
| 7 | Rail line tools and materials | 4031–40319 |
| 8 | Signal equipment | 1041–40416 |
| 9 | AC line relays | 40417 |
| 10 | DC nonpolarized line relays | 10418–40121 |

Major Divisions of the Metal Processing Sector[1] (Continued)

| Category Number | Category | Code Number |
|---|---|---|
| IXXX | Streetcars and parts | 408–40867 |
| XXX | Merchant vessels | 419–4273 |
| | Self-powered boats | 4190 |
| 1 | Seagoing boats | 4191–4195 |
| 2 | Coastal boats | 420–4205 |
| 3 | Inland-waterways boats | 421–4215 |
| 4 | Special boats | 423–4239 |
| 5 | Working boats | 4251–4262 |
| 6 | Other boat machinery | 427–4273 |
| XXXI | Motor vehicles and parts | 430–44155 |
| | Motor vehicles | 4301 4305 |
| | Motor vehicle parts | 4321 |
| 1 | Vehicle engine parts | 4322–43245 |
| 2 | Front axle and steering mechanism parts | 4331 |
| 3 | Transmission parts | 4351–43516 |
| 4 | Rear axle and differential parts | 4371 |
| 5 | Brake system parts | 4391 |
| 6 | Shock-absorber parts | 4411 |
| 7 | Body parts | 4413–44134 |
| 8 | Other parts | 44151–44155 |
| XXXII | Roller bearings | 444–44442 |
| XXXIII | Telecommunication equipment and parts | 446 44814 |
| 1 | Wire telegraph equipment | 4461–44614 |
| 2 | Telephone equipment | 4463–44633 |
| 3 | Telephone exchange equipment | 4464–44644 |
| 4 | Augmenters | 4466 |
| 5 | Wave carriers | 4467 |
| 6 | Wireless transmitters | 4468–44683 |
| 7 | Wireless receivers | 4469 |
| 8 | Small transceivers | 4470 |
| 9 | Radio receivers | 4471 |
| 10 | Amplifiers | 4472 |
| 11 | Broadcasting equipment | 4473 |
| 12 | Telecommunication equipment major parts | 4477–44781 |
| 13 | Hand-operated generators | 4480 |
| 14 | Electronic tubes | 4481 44814 |
| XXXIV | Hoisting and transporting equipment | 450 45264 |
| 1 | Elevators | 4501–45012 |
| 2 | Cranes | 4502–4509 |
| 3 | Transport machinery | 4521–45216 |
| 4 | Light mine and industrial railway rolling stock | 4523–45264 |
| XXXV | Pumps and air compressing equipment | 454–45614 |
| 1 | Pumps | 4541–45418 |
| 2 | Air compressors | 4551–45513 |
| 3 | Common air blowers | 4561–45614 |
| XXXVI | Crushing and grinding equipment | 458–4588 |
| XXXVII | Welding machinery | 460–4604 |
| XXXVIII | Industrial tools | 462–46852 |
| 1 | Cutting tools | 4621–46218 |
| 2 | Hand tools | 4651 46517 |
| 3 | Woodworking tools | 4655 46553 |
| 4 | Clamping tools | 4661 46613 |
| 5 | Pneumatic tools | 4663–46633 |
| 6 | Electric tools | 4665–46653 |
| 7 | Measuring tools | 4667-46675 |
| 8 | Grinding tools | 4669–46695 |
| 9 | Molding tools | 4681–46814 |
| 10 | Turning tools | 4685–46852 |
| IXL | Industrial equipment | 470–4707 |
| XL | Heating equipment | 4801 4808 |

Major Divisions of the Metal Processing Sector[1] (Continued)

| Category Number | Category | Code Number |
|---|---|---|
| XLI | Firefighting equipment | 483–48362 |
| 1 | Firefighting machinery | 4831–48312 |
| 2 | Fire extinguishers | 4832–48322 |
| 3 | Fire hydrants | 4834 |
| 4 | Fire engines | 4835–48352 |
| 5 | Fire ladders | 4836–48362 |
| XLII | Medical instruments | 485–48923 |
| 1 | Pharmaceutical machinery | 4851–48517 |
| 2 | Chemical pharmaceutical apparatus | 4881–48814 |
| 3 | Medical instruments | 4891–48923 |
| XLIII | Meters and testing equipment | 493–49975 |
| 1 | Inspection equipment | 4931–49320 |
| 2 | Instruments and meters | 4941–49975 |
| XLIV | Motion picture machinery and parts | 510–5114 |
| XLV | Electric wires | 516–51914 |
| 1 | Copper wires | 5161–5166 |
| 2 | Aluminum wires | 5168–51681 |
| 3 | Electric cables | 5170–51725 |
| 4 | Other alloy and metal electric wires | 5191–51914 |
| XLVI | Metal structures | 5201–5212 |
| XLVII | Cultural and consumer products | 5331–5502 |
| XLVIII | Metal products | 6011–60538 |

[1] State Statistical Bureau, *Kung-yeh ch'an-p'in mu-lu* (*Index of Industrial Commodities*), Peking, 1953, pp. 41–85.